data channels

Nov 75

ON THE INSIDE

LATE

The New~~quipment descrip~~vice Commission (NYPSC) asked for comme~~r~~ processing equi~~p~~th on a new program for certifying and ir~~Equipment descri~~lependently-made terminals to the intra-state ations, repro~~ork:~~

—Estab~~machines~~ a certification program by all telephone companies~~quipment de~~ithin the state. This program would be similar to ~~rocessing~~ ~~ow~~ used by Rochester Telephone Co. Independently ~~made~~ modems as well as main station telphones and PBXs would be eligible for certification. Once. approved, they could be connected to the network through RTC's network protective device (NPD).

—Direct connection of certified ancillary devices used as extensions to main station equipment.

Interested parties were asked to comment by Nov. 3rd.

"A bitter pill wrapped in a candy coating"

Ma Bell was hit where it hurts last month when the New York Public Service Commission (NYPSC) endorsed the idea of certifying independently-made terminals and connecting them to the interstate telephone network through a simpler, cheaper protective coupler than the one now specified by the phone company.

The endorsement was contained in a lengthy statement submitted by the NYPSC to the FCC, which is considering two proposals that would make independently-manufactured terminals —data as well as voice— vastly more appealing to users of the dial-up network. These proposals represent the latest attempt —in a battle that has been underway at least seven years, since the FCC's Carterfone Decision— to eliminate Ma Bell's "foreign attachment" restrictions.

Besides commenting on the two proposals pending before the FCC, —one from California, the other developed largely by the FCC's chief engineer— the New York PSC also produced the first hard evidence that certification really works.

In 1972, the state commission allowed the Rochester, N.Y. Telephone Co. to adopt a program for certifying independently-made terminals of all types —modems, telephones, PBXs, answering units and other "ancillary devices"— and connecting them to the intra-state dial-up network through simple, cheap protective couplers. Last month, in its statement to the FCC, the New York commission analyzed the results produced by the "Rochester Plan" during more than two years of operation, and concluded that "the telephone network has been protected adequately against technical degradation."

This language is particularly significant because, for years, AT&T has been arguing that much greater and more expensive protection than that provided by the Rochester Plan is necessary to protect the telephone net against harm from independently-made terminals.

Bandwagon Effect

It now appears virtually certain that New York will adopt a greatly-liberalized interconnect program for its intra-state network. Probably, this new scheme will consist simply of expanding the Rochester Plan to include New York Bell and its customers. (Just before we went to press, a high-ranking source within the New York PSC said the commission, "within

the next few days," will announce a proceeding aimed at requiring New York Tel to allow connection of customer-provided terminals through couplers like the ones used by Rochester Tel).

This move seems likely to start a bandwagon rolling through the other states, particularly since California has already adopted a certification/direct connect program for its intra-state network. (DATA CHANNELS, May '75, page 1). Once a number of states jumped aboard, the present interstate restrictions on foreign attachments would become largely meaningless, since the phone company's customers access the interstate network through intra-state circuits. Thus, the FCC would have to adopt conforming regulations, and that in turn probably would make it necessary for all the remaining states to fall into line.

Actually, there is substantial sentiment within the federal commission and its staff favoring adoption of a more liberal policy *before* a large number of states do so. One reason is that a federal plan, by adopting uniform certification and inter-connection procedures, would discourage the states from marching off in different directions and creating unnecessary red tape, as well as extra expense, for users and suppliers. Another reason is that by acting sooner rather than later, the feds would have more to say about the specific certification and interconnection procedures finally adopted at both the state and federal levels.

Another View

While Ma Bell's hold on the dial-up terminal market seems to be on the verge of slipping significantly, some sideline observers remain skeptical. They believe that the phone company, even if forced to accept a substantial lowering of the interconnect, barrier, nevertheless will be able to retain its competitive advantage.

These observers point out that the New York commission, in last month's statement to the FCC, recommended exclusion of telephone company-provided terminals from any certification program finally adopted by the feds. The New York PSC also said the states should be allowed to develop their own intra-state programs as "alternatives to" any federal program. Furthermore, the New York commission argued that "it is essential" for the FCC to "specifically authorize telephone companies as alternative certifying agents."

The basic concern of the skeptics is that this approach would give the states too much leeway. Many state commissions, they argue, are overly sympathetic to AT&T's point of view, and so the result could be a "new" interconnection program so loaded with technical and administrative obstacles that independent manufacturers and dial-up network users wouldn't be any better off than they are now.

One counter-argument is that each intra-state network connects directly to the interstate system, so the FCC would have at least some control over state plans. The New York PSC, in its statement, recognized this by saying that "any alternative plan adopted within a state would, of course, be subject to FCC approval when conforming interstate tariffs are filed."

Another counter-argument is that a big percentage, if not a majority, of the nation's data terminals are located in New York and California, the states whose commissions are generally considered most independent of telephone company domination.

A Big Boost

In any event, even if "alternative" certification/interconnect plans did enable the telephone company to hold on to some of its present competitive advantage, the New York commission's statement has clearly given Ma Bell's adversaries a big boost, by:

● endorsing the central idea underlying both of the plans now pending before the FCC: the testing of independently-made terminals against a set of uniform technical specification, developed jointly by all interested parties rather than just the phone company, and explicitly stated in public.

● providing objective evidence, based on the Rochester Plan, that AT&T's present interconnect requirements are more complex and expensive than they have to be. The Rochester program offers "a substantial cost advantage over the expensive Bell interface devices," says the New York PSC at one point in its statement. "In the case of answering devices, the consumer pays non-recurring charges of $20 for installation of the NPD (network protective device), and about $20 for certification costs. The only recurring charge, for the NPD itself, is $1.40/month. Compare the latter figure with the $3.10 recurring charge for Bell's GTS coupler, the cheapest interface for answering devices offered by New York Telephone."

Something for Everybody

The New York commission's statement performs one other service for proponents of more liberal interconnection that may be less obvious. It lays the basis for a program which, if adopted by the FCC, would enable both the phone company and the states to carry away at least some spoils from the battle and thus prevent either or both from going to court. One observer calls the plan "a bitter pill wrapped in a candy coating."

For the states, the chief benefit would be the right to establish alternative interconnection plans. AT&T, meanwhile, would remain the certifying agent for many if not most customer-provided terminals, and its own devices would remain outside the program.

Once such a policy was in operation, it seems likely that the interconnect restrictions would be liberalized further. As one source inside the New York PSC puts it, "we believe it's better to take several small steps rather than a few big ones."

Asked specifically what he meant, this source pointed out that the staff of the New York commission is already on record as favoring direct connection of certified answering devices (he's referring to a staff brief, dated last July 25th, in Case 26635, a commission investigation of complaints regarding New York Tel's requirement that automatic answering devices must be interfaced to the dial-up network through telephone company-provided couplers).

Although the commission believes the NPD is necessary for all other types of customer-provided terminals, adds our source, "this is how they feel right now, officially." He indicated that if, as seems likely, New York adopts the NPD as the interface between all customer-provided terminals, it will soon become apparent that even simpler protective coup ___ can be used to interface some kinds of terminals. ___ ork components.

In its statement to the FCC last month ___ with the knowl-fundamental conclusion suggested by ___ r ___ faster or more the Rochester Plan is that companies ___ Bell system are capable of developing ___ rdware watershed devices which provide effective protect ___ would then com-network against several substantial te ___ he interim, IBM view, it is obvious that an effective meas ___ ries with both the technical innovation necessary to reduce ___ y series have protective interfaces is. . .absolutely essential. ___ he lack of therefore, that the program ultimately adopt ___ cted in a should provide for the certification ___ f protect ___ ty is that developed by independent manufacturers. These ___ vehicle used in connection with PBXs, key systems, or othe ___ to whatever extent the certifying authority finds pro ___ s, IBM

Conceivably, if the FCC adopted this approach ___ it ___ o vn lead to use of NPDs even simpler and less expensive ___ one specified by Rochester Tel, and ultimately to deve ___ ent of acceptable protective components, built into the t ___ r ___ s innards, which would eliminate the coupler as a sepa ___ element and produce direct connection at no extra cost to ___ user.

2

Justice Department attacks court ban on remote bank terminals

"The district court's ruling is not only anti-competitive but is based on 'horse-and-buggy' notions of our modern banking system," said the Department of Justice last month.

This was one of several criticisms the department leveled at a recent ruling by U.S. District Court Judge Aubrey Robinson, Jr. that remote teller terminals are branch banks, subject to the restraints of the National Bank Act. (DATA CHANNELS, Aug. '75, page 7).

The Justice Department brief was submitted to the U.S. Court of Appeals on behalf of the Comptroller of the Currency. Last December, the comptroller decided that remote teller terminals (formally known as customer-bank communication terminals, or CBCTs) aren't branch banks. He established rules which have led national banks to install a large number of these facilities in retail stores and other "convenience" locations. If the district court ruling remains in effect, however, the banks will have to close most of their terminals and won't be able to open many new ones. Most important, perhaps, savings and loan associations will not be fettered by such restraints.

The Comptroller of the Currency is planning to appeal the district court decision, but in the meantime he wants it lifted.

A Justice Department spokesman said at press time that he doesn't know when the appeals court will act on the request for a stay of the lower court decision. □

HIGHLIGHTS OF NEW YORK PSC COMMENTS TO THE FCC

● "Both programs (proposed to the FCC) contain the most important substantive ingredient: uniform technical standards.

● "Section 68.108b (of the FCC chief engineer's plan) provides that all ancillary terminal equipment and data sets procured by a telephone company one year after the effective date of the rules must be registered if they are to be directly connected to the network. . .Our fundamental concern about this requirement is whether it is necessary. . .Certainly it is not required to assure protection of the network, since telephone companies have for years been procuring such equipment without the need for registration. . .A proper public interest objective (could be achieved) by a requirement that (telephone companies) submit their manufacturing and performance procurement specifications to the FCC and state regulatory agencies. These could be compared to the standards being applied to customer-owned equipment. If they are less stringent, the telephone companies would have to justify their use of them in the context of adequate network protection. And if the less stringent standards are justified, liberalization in the FCC standards applied to customer-owned equipment could be considered.

● "If (the) chief engineer's plan is adopted for use nationwide, individual states should still be free to offer additional plans as alternatives to the federal program, for use within their respective jurisdictions so long as protection of the network is assured. This will allow experimental programs and innovations within states, without impairing the effectiveness of the federal program. Any alternative plan adopted within a state would, of course, be subject to FCC approval when conforming interstate tariffs are filed. Accordingly, we suggest that language along the following lines should be substituted for that in proposed section 68.108d (of the chief

'Nothing herein shall be construed to prohibit commission from authorizing the offering of program for the connection of customer- so long as it is offered in addition to, substitution for, the program contained in this the degree of network protection part.'

3790 (bi- language may contain a boobytrap for terminal makers and their customers. It could be that a state establish overly-protective interconnect for inter-state service. Since the intra-state and networks are integrated, this would prevent the use that satisfied only interstate specifications, assuming were more liberal).

"The rules (incorporated into the chief engineer's plan) affirmative measures to. . .minimize the possibility of equipment being marketed that does not conform to technical requirements. . .An affirmative measure promoting quality control, in addition to the deterrence provided by the revocation remedy, would afford better protection. . .Accordingly, we suggest that applicants should be required to show

that they will maintain an effective quality control program. . . This showing could then be reviewed. . .by the FCC in determining whether to register the equipment.

● "We suggest that. . .the FCC specifically authorize telephone companies as alternative certifying agents because any plan adopted for nationwide use will not necessarily assure that unregistered or uncertified equipment will not find its way into the hands of consumers. The FCC simply cannot require every manufacturer to seek registration of equipment. . . .An individual consumer cannot be expected to bear the expense of having his equipment sent to Washington to be registered. . .Consumers. . .should be able to seek certification from their telephone company. This would be the least expensive, most convenient avenue for them to pursue.

● (Regarding the California PUC plan), "the certifying authority should be expanded to assure that registered electrical engineers will be legally, financially, and technically qualified to act as certifying agents. Specifically, the certifying engineer should be precluded from having any interest in any telephone company, manufacturer, vendor, or competitor, as opposed to only those he may be directly involved with in 'certification proceedings.' . . .An engineer having experience in the field, but who does not have the proper facilities to conduct tests, cannot properly undertake the certification duty. Indeed, it is conceivable that something tantamount to a testing laboratory will be necessary to carry out the function properly.

"Rochester Plan" Comments

● "By the end of the first quarter of 1975, the company was providing service to 301,692 telephone lines. Although only 1,223 were interconnected with CPE (customer-provided terminal equipment), representing less than 0.5% of Rochester Tel's total lines, it is clear that use of CPE has grown under the company's NPD-certification program. . .The growth rate may approach 8% per quarter, a compounded annual rate of 36%. While. . .it would still take three years for CPE lines to constitute even 1% of the total, it does indicate that consumer interest in CPE is still strong, particularly on business lines. . .

● "In the case of the Rochester offering, qualitative measures of service demonstrate clearly that service has not deteriorated. . . .Trouble reports on lines with CPE have been lower, and in most cases significantly lower, than reports for the total company, even when excluding station troubles from the total company figures. . .The New York PSC has not received a single complaint about Rochester's administration of the program itself. The only complaints. . .have concerned the requirement of an NPD and the charges associated therewith . . . The New York PSC's more than two years' experience with the Rochester program suggests that the company has managed the program properly, that consumers have made effective use of it, and that the telephone network has been protected adequately against technical degradation. □

AUERBACH ON SNA

by: Steve Callahan
Auerbach Publishers, Inc.

SNA (Systems Network Architecture), IBM's new tele-communications support plan, is composed of three major components: Virtual Telecommunications Access Method (VTAM), Network Control Program/Virtual Storage (NCP/VS), and Synchronous Data Link Control (SDLC). VTAM runs in the host processor; NCP/VS runs in the communication controller. Together, they operate and control SDLC communication lines and terminals.

VTAM is the common access method and network manager. It establishes the link between the terminals and the application programs. Once this link is made, VTAM assumes overall control of communication between the application program and the terminal.

NCP/VS is the communication controller's control program. It performs such functions as handling the lines, converting code, and buffering data transfers between the host mainframe and the terminals.

SDLC is the common line discipline. It establishes the procedures that govern data transfers between host and terminals.

These three items have been designed to work in concert to promote all forms of communication applications including remote batch, data entry, and transaction processing. Time sharing is not included under the new support, and its ultimate place with regard to SNA is unknown.

SNAs Pluses and Minuses

SNA can't really handle some of the newer communications capabilities, such as satellite transmission. Its handling of networking is extremely primitive — the new line protocol, SDLC, can now tolerate only a master-slave relationship, for example. This promotes a managed environment that is unlikely to get out of hand. However, the inability to recognize other primaries or equals eliminates, or at best unbalances, interconnection with other computer systems in a more expanded network.

But on the other hand, SNA is universally adaptable (within the IBM frame of reference) to all of the basic telecommunications applications under a single set of packages and procedures. And SNA is open-ended: while a number of new capabilities are permitted by the new design, it has the potential for a great deal more. For example, the current implementation of the new SDLC protocol offers 13 commands; this is by no means an exhaustive list.

The new capabilities made possible by SNA may require the user to acquire additional resources. This occurred with IBM's operating systems. And, as happened with the operating systems, inclusion of additional capabilities may favor the sophisticated user, requiring the less sophisticated to obtain resources for functions that aren't needed.

The new SDLC protocol will be offered for all new terminals, and ultimately will replace bi-synch — the IBM, and de-facto industry, standard protocol. At least for a while, however, Armonk will continue to offer emulated support for bi-synch and some start/stop terminal devices. Other manufacturers — notably Burroughs and DEC — recently have announced communication protocols related to SDLC, and others are bound to follow suit. While non-IBMers probably will not buck the SDLC tide and offer a new, home-grown protocol, they aren't likely to embrace SDLC quickly.

Terminals

One of the major frustrations associated with previous IBM data communication support was the proliferation of separate terminal networks within the same computer system. Terminals were dedicated to access methods, and access methods were dedicated to file structures within application programs. This meant that to support applications using varied file structures, an installation often was required to operate separate terminal networks. The result was an obvious waste in duplicated resources.

The introduction of VTAM has brought a halt to this duplication. SDLC terminals can access any VTAM application using any file structure. This means that SDLC terminals can share all of the resources controlled by VTAM, including communication lines, communication controllers, and VTAM application programs.

For people now using TCAM, their application programs can share the physical facilities of VTAM, or operate an exclusive network for support products not included under VTAM (such as TSO). A shared network uses the TCAM-through-VTAM facility, which is supported by the 370x communication controller under NCP/VS. An exclusive network requires the Programmed Emulation Partition (PEP) facility. Those using the other access methods, QTAM and BTAM, can operate programs concurrently, but each method requires separate transmission facilities and application programs.

In the past, IBM tended to vest the central computer with responsibility for running and keeping alive both local and remote operations. But SDLC includes greatly-increased off-line capabilities designed to keep remote terminals operating when the central computer and/or intervening communications facilities go down. Depending on the specific remote device, operations can continue with no noticeable change. This is especially true if the off-line capability is a simple data gathering operation that will store the information until communication with the host mainframe can be restored. If the remote operation is performing a true processing function, there is generally more dependence on the host mainframe to interact with the remote units.

Decisions on what processing functions are performed by the host VTAM application program versus those performed by the remote processing unit are the responsibility of the systems programmer. The more functions given to the VTAM application program, the greater the vulnerability of the remote operation to downtime of the network components. These decisions, however, must be tempered with the $35 knowledge that the host can perform some functions faster and efficiently than the remote processor. and to cut

The introduction of SNA may define a hardware customers for all communication devices. The future could the or more. prise SDLC and non-SDLC devices. For intercom $35 to probably will continue to release terminal series SDLC and non-SDLC models. However, two in use CA's rate been announced with only SDLC models. Whether actions in non-SDLC support is an oversight and will be correct this future announcement is unknown. The only certain is SDLC devices will be IBM's primary communication for for the future. annel

For each of the existing major non-SDLC device 20 rich for has announced an SDLC equivalent. They are pair n s in Table 1.

IBM is defining its new SDLC breed of te "reasonably intelligent." What this means in terms of or processing independence is not altogether clear. It is ev that all of the new hardware contains some form of micro-logic, permitting additional functions compared to previous

hard-wired logic units. But these new terminals are also significantly more expensive than their predessors.

Is It Necessary To Change?

For some, the move up to the new SDLC terminals will be a boon — users with sophisticated remote processing requirements, for example. But for users with more simplistic remote processing needs, such as simple remote job entry or remote job initiation, the new SDLC terminals will offer marginal value at higher costs.

Whether to change depends on the immediacy of your requirement for the additional capabilities offered by SNA hardware and software products. IBM has recognized that for those running minimal communication applications, the move up is a lot to ask. Since it will continue to support bi-synch and start/stop communications for that user class, the answer for the small user is obviously, "stay put." But for medium to large users, the answer is not so simple. They may not need the additional capabilities offered, but they may fear (and rightly) that they can expect little or no improvement in communication support for their present systems. There is also the problem that converting later is likely to cost more than converting now.

IBM's answer to the dilemma seems to be to advocate running dual environments. That is, continue as is with your present communication networks and applications — but place all new applications under the SNA environment. The obvious intent of such a move is not benevolence but rather to create a craving on the part of the user to convert his entire network to the new products.

SNA's Components: A Closer Look

Protocols are the rules of etiquette for communication transmission. They represent the orderly exchange of communication devices, the purpose of the transmission process. Since it is to transfer data to and from a end communication processor. the processing of data. Therefore, particular type of communication apply a particular file-processing ols did).

SDLC is bit-oriented. Predecessor protocols — those developed by IBM as well as other manufacturers — are character-oriented. One result of this change is to permit use of a much greater number of communication commands without increasing the communication control overhead. In fact, the ease with which new commands can be added has already spawned industry discussion of an "Extended SDLC."

Also, SDLC offers a common format for all types of transmissions. The format, with its built-in flexibility for information length, serves short message applications (inquiry and transaction processing) and long message applications (remote batch and data collection).

Finally, SDLC is independent of NCP/VS and VTAM. In previous IBM protocols, the functions performed by these three elements were not separated. So, SDLC can be more flexible and responsive to differing network configurations and applications.

SDLC has been structured to perform polling for all transmissions. It does not operate in a true demand mode, where either the terminal or the host may authorize a transfer request. Rather, the host (or more accurately it's agent, the front end communications processor) must poll each station before any transmission can begin.

This arrangement is good because IBM's operating systems perform much better in such an environment. But it's bad because the central processor is required to service frequent interrupts. For example, interrupts occur to the central processor each time the front end processor wishes to unload its buffers to main memory or disc.

VTAM

VTAM directs the transmission of data between the application programs and the terminals. Thus, VTAM's logical control extends from the application program to the terminal device itself. According to IBM, VTAM distributes the telecommunications workload to other nodes (components) of the network. These other components include NCP/VS, which runs in the front-end communication processor; SDLC, and the new terminals.

VTAM's strength lies in its ability to create and control a shared network as well as its ability to work with a number of different file structures. The shared network means that application programs can share the communication lines, communication controllers, and terminals. The broadening of support for file structures does away with the necessity for multiple access methods, each supporting a specific set of file structures. These two abilities are lacking in predecessor access methods.

But IBM has erred, in our opinion, by not having VTAM relinquish more control to NCP; that move would have created a much more distributed network architecture and reduced the load on the central processor (see the discussion on NCP below).

One aspect of VTAM often passed off as a simple procedure is the network definition required to create a VTAM telecommunication system. But this isn't a simple chore. The systems programmer must know what the system looks like from four viewpoints:

First, he must know the physical configuration of the host processing system, with its various locally-attached peripherals and the communication network and its devices. Knowledge of the communication network must include the varieties of communication lines, and the manner in which they are attached (point to point, multipoint, dial-up, etc.). Secondly, he must know how the telecommunication system is seen by the host's operating system, including its use of various telecommunication disc-resident libraries. Thirdly, he must know how VTAM views the telecommunication system. Fourth, he must know how the application package views the

-SDLC Equivalents	SDLC Equivalent Device No.
Terminals	3767
Processing	3770
inals	
lication Con-	370x
erminal Sys-	3790 (SDLC)
ated Commu-nication Controllers	No SDLC equivalent*

available only on the smaller System/ machines (125, 135), their ability to host complex comp nts probably is marginal. Therefore, a si ar to al SDLC equivalent probably was deemed not Independe e effort. However, these same System/370 models an pp st a 370x communication controller, which would appr ow for a full-blown SDLC environment; but the system RT robably would be dedicated to the effort.

telecommunications system.

Obviously, the definition procedure is quite a bit more than defining the physical attachments to VTAM. The amount of power invested in the systems programmer to do good or evil while he's defining the network is extraordinary. In this regard, the complexity of the telecommunication activity might have been better served by offering a package program in place of the macro instructions comprising IBM's VTAM software. Operating and managing a full-blown VTAM communication network approaches the proportions of handling a primitive operating system. As the frontiers of communication are pushed out, creating a network definition using VTAM may become impossible.

NCP/VS

NCP/VS is a system software package that runs in the 3704 and 3705 communication controllers. Its purpose is to control communications between VTAM and remotely-attached devices. In fact, NCP/VS is subservient to VTAM, which makes 3704 and 3705 controllers subservient to the central processor.

NCP is advertised as assuming functions formerly performed at the central processor — for example, translating character codes, controlling dynamic buffering, providing error statistics to VTAM, and handling recoverable errors. In addition, NCP performs traditional functions — e.g. controlling lines, de-

tecting permanent line errors, and activating/deactivating lines. However, while both the new and old functions are actually performed in the communication controller, they are controlled by VTAM. For example, when NCP wishes to deactivate a line, it must check with VTAM; it is VTAM that actually issues the deactivation command.

Because of its dependence on VTAM, NCP/VS appears to be the weak link in an otherwise promising telecommunication support system. This is not to say that NCP is not doing its job, but rather that NCP's job assignment is somewhat light and its activities are not free and clear of VTAM's intervention. It would seem much more appropriate to provide NCP with a set of parameters and a program to monitor itself. At specific time periods, or when limit parameters have been exceeded, NCP could ask VTAM for direction. This would be more efficient than NCP's current practice of recognizing a condition, specifying the appropriate action to VTAM, and then asking VTAM to issue a command to perform the action. It could also then be more accurately called "distributed intelligence." ☐

(This tutorial is an adaptation of a recent special report entitled "IBM System Network Architecture and SDLC," prepared by Auerbach Publishers, Inc., Philadelphia, Pa. 19107. The original report appears in "Auerbach Computer Technology Reports" and is available as a special report from the publisher. Price: $25.00)

WUI proposes new international packet-switched datacom service

Western Union International (WUI) last month received permission from the FCC to provide a dedicated, packet-switched service between the U.S. and U.K. The customer is the Defense Department's Advanced Research Projects Agency (ARPA).

The new service should significantly advance WUI's tentative plan to offer a commercial packet service between this country and Europe (DATA CHANNELS, May '75, page 4).

P. H. Sach, WUI's assistant vp for tariffs, alluded to a commercial service when he said, in last month's request to the commission: "Through this experimental service, WUI, ARPA, the U.S. government, and the overseas entities will acquire expanded knowledge of the technical parameters of. . .packet switching technology. If the experimental service is provided for its full two-year term, WUI believes it will reveal answers to many of the technical questions which must be pursued prior to any further development of international packet switching, including the adaptability of the SIMP (satellite interface message processor) for commercial application and whether the SIMP should properly be located at the earth station or the carrier's (i.e. WUI's) operating center."

An ARPA spokesman said the new service will be the first trans-Atlantic application of packet technology. The U.K. terminal will be operated by University College, London, one user of Britain's Experimental Packet Switched System (EPSS), a newly-developed data net operated by the British Post Office (DATA CHANNELS, Jan. '75, page 3). Apparently, one aim of the ARPA experiment is to study the problems involved in transmitting messages between two packet networks.

Messages will flow between the ARPA network and University College over a half-duplex, 50 kbs. dedicated satellite circuit obtained by WUI from Comsat. Up to six terrestial circuits, operating at 9.6 50 kbs., will be able to access the satellite link through a SIMP located at Comsat's Etam, W. Va. earth station, and facilities will be provided for transmitting on a point-point as well as multi-point basis.

The test is scheduled to last two years but will be "reviewed" after the first year, said the ARPA spokesman.

"It is important that the (ARPA) experiment have sufficient duration to permit proper operational experience," said WUI's Sach in his letter to the FCC. "Consequently, WUI proposes to

operate the service through simulation from its operating center to the earth station, up to the satellite, and back to its center. . .for a period of 2 months if ARPA cancels service prior to 14 months. . .or for one month if ARPA cancels after 14 months." ☐

American Satellite cut

Bigger discounts for customers leasing on the specific remote satellite channels were proposed with no noticeable cha... Satellite Corp. (ASC), along with -line capability is a simple dam charges. The company said both store the information used by similar price reductions t mainframe can be restored lier (DATA CHANNELS, Aug. '75. ming a true processing functi

Specifically, ASC offered dence on the host mainframe gle-channel rate for customers for 12-23 channels; 30% for 2 essing functions are performed 0 or more. The discounts would program versus those perform nd termination charges. The c nit are the responsibility of t le voice, record, data, and/or a e functi pler pro n to the VTA point, half- or full-duplex basi ter h erminal ability of

In addition to the above pr c the netw rk comp cutting the single-channel ter e tempered with the $35 t $20/month. ome functi r faster

By comparison, RCA, in its e ssor. d to cut channel mileage and terminati y define a ha rdware ustomers leasing 12-23 channels, and 30% The future would t or more. Its single-channel termination devices. For he int om $35 to $25/month. ase terminal s ries

(Just before we went to press lowever, two new s CA's rate cut request, and Western Union r models. Whether ctions in its Westar tariff. The commission and will be corre er this proposal or the one submitted by ASC he only certainty i.

ASC, in last month's filing, included commun ication ve s for service between San Francisco and Pitts annel for 1-5 channels; $810 each for 6-11 cha C dev 20 ri s h for 12-23; $630 each for 24-59, and $585 each are p or n s s

The company also asked the FCC to allow a $10 reduction in the present $700 channel charge between Dallas-Los Angeles and Dallas-New York. ". . .to allow us to compete with SPC's (Southern Communications) network pricing on these ASC 'bre o butter' routes."

Datran plans flat-rate, high-speed fax services

Datran reportedly is studying a new, switched datacom service that would offer unlimited transmission time at a specified speed for a flat monthly charge.

Basically, this new service would encompass any two terminals connected to Datran's Datadial switch; a user could also communicate with compatible terminals hooked up to other systems — for example, AT&T's DDS or dial-up networks, Western Union's TWX/Telex or broadband exchange services. He could communicate with a different terminal on each call without paying a premium, and he could also send the same message simultaneously to a number of different points.

Rates for the new offering haven't been finalized yet, according to a knowledgeable outside source, but he said Datran is "thinking about" $210/month for 110 bps. service, for 300 bps., and $800 for 1200 bps. Higher speeds are added.

The new service is offered reportedly depends on a market study now underway, and on what Datran asks the FCC for its blessing, since competitors are virtually certain.

officials, when asked to confirm the report that a communication service is under consideration.

again by an outside source — that announce a high-speed facsimile service months. It would be capable of x 11 in. page of text in a minimum of 40-50 cents/page for volume users, added that Datran plans to charge the equipment, circuit, and a ted pages. Thus, there would be the customer transmitted more of pages. In addition, this fee ly to all of a particular user's separately, so he would be low-volume locations

aid to be a digital fax unnyvale, Cal., which ations circuitry. It among other features, led call setup pro by the terminal provide three press," "quality," and "fine further.

both declined to say anything ce and terminal. tran was supposed to be on the data ment with RCA Globcom to follow-, multiple access, all-digital (page interior of the United States n-Datran source close to the

board rules teller branch banks

board has ruled that remote teller anch banks, so all financial institu- state —savings and loan associations well as commercial banks— are free to s subject to only a few restrictions. The terminals handling deposits or withdrawals so close to competing facilities that the or destructive competition." All applica-approved by New York Superintendent of Banks Heimann.

negotiations says he expects the two companies to begin the service before the end of this year, provided the FCC goes along.

The Datran-RCA offering reportedly will allow transmission at 2.4, 4.8, and/or 9.6 kbs. Later, lower speeds may be added, according to our source. He said Datran plans to provide either private or switched access channels to RCA's international gateway in New York City.

Earlier, Datran officially announced that 12 more cities will be added to its network by mid-1976; 18 are now connected, and the network extends coast-to-coast. Five of the 12 new cities will be interconnected by the end of this year: Atlanta, Denver, Hartford, Milwaukee, and Phoenix. The other seven are Cincinatti, Indianapolis, Miami, Minneapolis, New Orleans, Portland, and Seattle.

Datran officials also reported that the company has received another $10 million loan from Swiss Industrialist Walter Haefner — bringing his total investment to $40 million.

The latest infusion came after the company publicly admitted it needed this much money to continue operating until the end of 1975 (DATA CHANNELS, June '75, page 3).

Datran plans to convert Haefner's latest $10 million loan — plus $10 million he invested earlier this year — into subordinated convertible debentures. The debentures, in turn, would be convertible into 2 million shares of Datran common stock. In addition, Haefner would receive a 10-year common stock purchase warrant, allowing his holding company to buy up to 1.7 million shares of common stock in Wyly Corp., Datran's parent company. The price of the Wyly common is "to be determined, but ... is expected to be approximately 25% above the average of recent closing prices of Wyly common stock." Haefner already has a similar, 10-year warrant, part of an earlier loan agreement, which entitles his holding company to purchase 1.3 million shares of Wyly common at $2.75/share.

The company's plan to give Haefner $20 million worth of debentures, plus a second warrant to purchase Wyly common, is part of an "alternative" financing plan which must be approved by the FCC. Another feature of this plan requires Datran to pledge "substantially all" of its assets to Haefner as further security. But the agreement also provides that Haefner can't directly own more than 20% of Datran's capital stock (this is the maximum alien ownership allowed under the Communications Act of 1934).

The FCC's decision on the alternative financing plan won't be made until after it has reviewed a detailed report, due this month from Datran, describing "all current and prospective investments" by Haefner and others in both companies. The report is also supposed to include information on all of Haefner's "other business and financial interests." In the meantime, his latest $10 million loan is secured by an "interim note." Wyly must repurchase the note, once the alternative plan is approved by the FCC, or else give Haefner "substantial assets" which weren't explicitly identified but probably consist of its Gulf Insurance Co. subsidiary. ☐

A note to our readers

Some of you may have noticed that the dateline on the first page of last month's DATA CHANNELS reads "April, 1975." We apologize for the typo and assure you that what we published last month was the August, not the April, 1975 issue.

The editor of DATA CHANNELS (who also happens to be Chief Copyreader) was quite angry when he discovered this error, but he soon realized whose fault it was and decided magnanimously, that even Chief Copyreaders are entitled to make a mistake now and then. ☐

Standards: RS-232C update nearly ready; proposed net interface OKd

A new terminal interface standard —designed to either replace or supplement RS-232C (this is one of the unresolved questions)— was nearing final approval last month within the Electronic Industries Assn. (EIA). An association official says it's likely the new specification will be adopted by the end of this year. It's currently referred to as RS-XYZ, pending assignment of a permanent number.

The standard, basically, defines the various functions needed to control interchange of data between a data terminal (DTE) and a modem or other circuit-terminating device (DCE). It also describes the physical characteristics of the circuits needed to implement these functions, and assigns specific circuits to specific connector pins. Interfaces are specified for data terminals operating in serial binary mode that have separate control circuits and which are intended "primarily" for operation on analog networks.

More specifically, RS-XYZ applies to non-switched, dedicated, leased or private line service, either two-wire or four-wire, point-to-point or multi-point. It also embraces switched network service, two- or four-wire. Consideration is given to interfacing of automatic calling equipment, however some of the interchange circuits required for that type of service are specified in EIA standard RS-366.

Like RS-232C, RS-XYZ is a physical interface standard. The electrical characteristics of the interchange circuits are described in two other documents, RS-422 and RS-423, which were adopted last April. The former standard covers terminals operating above 20 kbs.; the latter, terminals operating at 20 kbs. and below.

There are several significant differences between RS-XYZ and RS-232C:

A new 37-pin connector is specified. The present one has 25 pins. A "connector latching block" is included in the RS-XYZ spec, which permits attachment and disconnection of the pin assembly without use of a tool. The connector pin assignments have been chosen to "facilitate" connection of terminals designed originally to RS-232C specifications.

Partly, the larger connector is required to accommodate the special requirements of terminals operating above 20 kbs. RS-XYZ will be the first physical interface specification to cover this equipment. In addition, RS-XYZ: drops four of the circuit functions specified in RS-232C and adds six new functions; contains new circuit function definitions, new circuit nomenclature, and a new set of "standard interfaces for selected communication system configurations." The latter consists essentially of a table specifying a standard set of DTE-DCE interchange circuits operating in send-receive, send-only, receive-only, and data-and-timing-only modes.

A number of manufacturers reportedly are developing adapters that will enable existing RS-232C connectors to be attached, without rewiring, to the new RS-XYZ assembly. Amp, Inc., Harrisburg, Pa., is among these firms.

Related News

The major obstacle barring international agreement on a new standard for interfacing synchronous terminals to circuit-switched public networks seems to be resolved.

The basic issue involved the method of synchronizing control and data signals transmitted by data terminal equipment (DTE) to the network. One approach, favored by several European countries, required use of an extra "byte timing" circuit between the DCE (data circuit-terminating equipment — e.g., a modem) and the DTE. It also required addition of two extra bits to each 8-bit information byte transmitted to or from a DCE, and forced the DTE to synchronize with the network before transmitting any control or information characters to another DTE.

U.S. representatives thought the byte timing circuit was unnecessary. They argued that the two extra bits added to each information byte would reduce circuit utilization 25% and require costly modification of many existing terminals, modems, and network switches. In addition, they said that terminal-terminal transmissions should be independent of network synchronization.

At a recent meeting in Geneva, Switzerland, members of a CCITT working party developing the new standard (officially known as a "recommendation"), decided to make the byte timing circuit an optional feature of the interface. They also agreed that "for an intermediate period," terminals will be allowed to exchange control and information characters that are not synchronized with the network.

"There are a few other matters to iron out," said Hal Folts, a U.S. member of the working party, but he expects work on the draft to be completed in time for a vote next February by CCITT's Study Group VII, parent body of the working party. If approved by the study group, the proposed recommendation will receive final consideration at CCITT's plenary meeting in October '76.

□

Telenet begins commercial se[rv]ial report

Telenet Communications Corp. began operat[ing] and SDLC," first commercial packet-switched communicat[ion] adelphia, Pa. month. The initial system interconnects se[ar]ch Computer Lawrence G. Roberts, Telenet's president, [said] ial report from now has five customers on-line Scientific Time Sharing Corp., Beth[...] another five to be hooked up by the e[nd] om service is a "substantial" queue of custom[...] added.

[...]ion from its operating

Telenet expects to be serving satellite, and back to its November, and "well above" 24 [...] if ARPA cancels service reported Vice President Stuart L. [...]th if ARPA cancels after number than was promised in the [...] □ added. Palo Alto, Cal., Kansas C[ity...] [...]erminals o[...] Island are among the extra sites [...] intervening communi[...] locations should be on-line "thi[s...] [...]ng on the specific ren[...]le

Cities presently serviced [...] with no noticeable cha[...] New York, Dallas, Los An[...] [...]-line capability is a simple da[...] ington, D.C. [...] store the information u[...] [...]ions t mainframe can be restore[...]ier [...]g. '75 rming a true processing funct[...] [...]fered dence on the host mainfra[...]gle-

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